Pathways to Teaching: The Cluttered Online Infrastructure for Potential Teacher Candidates

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Abstract

This paper examines a sampling of messages available to potential teacher candidates when searching online and querying, "How do I become a teacher?" Methodology used was discourse analysis of online search results using critical questions informed by Ellsworth's (1997) notions of mode of address. Results reported here are from targeted searches on Google leading to hyperlink networks within institutional websites and social media platforms. In response to the search query on how to become a teacher, institutions present programmatic information that addresses viewers as already knowledgeable about the discourses of teacher education. Search results require browsers to sort through a cluttered landscape of requirements. Questions remain about whether or not there are comprehensible pathways presented to potential teacher candidates within one state context where teacher education enrollments are declining and teacher shortages exist across geographical regions and specific content positions like STEM education.

Keywords

messaging, teacher candidates, recruitment, shortage, online research

The Commissioner of Education in New York State asked within a Teacher Education Advisory Group (TEAG) meeting how a high school student interested in teaching might find information about the pathway to becoming a teacher (MaryEllen Elia, personal communication, December 14, 2017). She repeated this question and sentiment in April of 2019 (MaryEllen Elia, personal communication, April

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15, 2019). There appeared to be no one place to go for information on the rationale for becoming a teacher in New York State, nor for the nuts and bolts for getting started on and continuing in that pathway.

I attended those TEAG meetings and noted the repetition of the Commissioner's inquiry. I wondered how we in teacher education might communicate about pathways for potential teacher candidates where the messages about how to enter teaching are clear and also compelling. There is a slogan used by the United States Peace Corps that has invited volunteers to take up "The Toughest Job You'll Ever Love" (Coyne, 2009, para. 13). I ask current candidates what communication they receive about their choice to pursue teaching and the collection of messages is neither as cohesive nor as encouraging as the Peace Corps communication. Along with multiple sources candidates must sort and filter before arriving at any teacher education program are the often negative messages about teaching that emerge from personal and academic mentors and counselors, social and news media and even within communication from the White House. In the State of the Union (February 4, 2020), public schools, which are the context for a career in teaching for the majority of teachers and candidates, are framed as "failing government schools" (p. H760). While I might assume most teacher candidates did not attend to the State of the Union this year, such messages get repeated enough to make an impact on the shape of the teaching profession in public discourse.

Commissioner Elia pointed to a logistical problem of how to direct interested candidates towards a clear pathway into a teaching career. That problem accompanies the challenge of messaging that teacher education now has in drawing in and retaining Generation Y (Millennials), Gen-Z (Taylor, 2014) and the generations to follow. If there have ever been cohesive messages about what is required to become a teacher, those messages must shift to address the desires and anxieties of generations that now have experienced the Great Recession, the 2020 Pandemic and the seemingly endless evidence of racist brutality, which has sparked worldwide protests and has been called a virus "more deadly than COVID-19" (Abdul-Jabbar, 2020, para. 9).

Debating "A Coming Crisis" in Teacher/Candidate Supply

Potential teacher candidates might rarely if ever sort through research about the status of teaching in order to find a clearer pathway into the profession. However, it is worth examining how teacher supply is presented in research literature. We can ask how teacher supply might affect the messages teacher education programs communicate to potential candidates. For example, is there a shortage and a coming crisis for every teacher education program, making the need to examine and shift messages to young people more urgent? Or, are the shortages exaggerated in the literature, which would also affect how teacher education programs communicate about the need for teachers?

Enrollment in teacher education programs in New York State and in other states in the U.S. has declined by at least a third (Barth et al., 2016; Sutcher et al., 2016; Gais et al., 2018). Mentions of "teacher shortages" in the news have also increased (Dee & Goldhaber, 2017). Sutcher et al. (2016) included the phrase "A Coming Crisis" in their report and used federal databases to predict that, by this year (2020), the number of new teachers needed would rise to over 300,000 with annual teacher shortages of 112,000, and that this shortage would remain thereafter unless there are major changes in teacher supply or demand (p. 1). Dramatic headlines about the decrease in teacher and teacher candidate supply across some states are also used as evidence on one side of the debate that the

shortages do exist and that they constitute a crisis that is looming and will continue to affect communities that need teachers (Sutcher et al., 2019, p. 3).

However, the teacher shortage is not evident everywhere because there is an "inequitable distribution of qualified teachers" (Darling-Hammond & Podolsky, 2019, p. 1). One factor in distribution is dependent on where teacher candidates do their student teaching. Teacher education programs, which are the source and location of a majority of teacher candidates, are also not distributed equitably across contexts (Goldhaber et al., 2019). This varied distribution of shortages leads some researchers and organizations to argue against labeling the teacher shortage as "generic" and a national challenge (Dee & Goldhaber, 2017, p. 5). The shortages seem to be concentrated in high-need STEM subjects and in schools that serve mostly children of color who live in poverty, which reflects a type of status quo in teaching because these shortages have existed for some time now (Dee & Goldhaber, 2017, pp. 5-6). Have teacher education programs accepted this long-term inequity and does that acceptance of unequal distribution of their own teacher candidates reflect a gap in how they are examining what they communicate about teaching to their candidates?

The message that an outcome of generic labeling could be "generic solutions" like pay raises for all teachers (Darling-Hammond & Podolsky, 2019, p. 6) takes the form of a warning. Pay raises for all teachers becomes an insupportable message for some organizations like the National Council on Teaching Quality (NCTQ), who rejects the idea of teacher shortages and calls them a "fiction" because they can point to how the size of the teaching force is growing (NCTQ, 2017). There are indeed some communities who have no problem paying "reasonable salaries" and providing decent working conditions that result in less need to recruit and retain in the face of high teacher turnover (Darling-Hammond & Podolsky, 2019, p. 5). Other research shows that the "current supply of teachers is enough to meet demand" at the national level and the "enrollment drop off in teacher preparation programs is being offset by higher rates of completion and lower attrition rates among new teachers" (Barth et al., 2016, p. 8).

Metrics for the teacher shortage are used to point to different areas of need. While there is a debate about whether or not the teacher shortage constitutes a national crisis, which affects the messages we can send about the state of the teaching profession, there is little doubt that fewer teacher candidates across contexts and from a diversity of cultural groups are entering into teacher education programs (Carothers et al., 2019). New York State provides one case and context for discussion of the mixed messages available to potential teacher candidates about the teaching profession.

New York State's Context

New York state has a wealth of colleges and universities, most of which have teacher education programs. The Rockefeller Institute of Government writes that New York State has not experienced a teacher shortage related to the balance of teachers and students, with no growing imbalance in class size and ratios of teachers to students. The demand for new teachers in the near future is also low due to declining overall enrollment in the state with no expected rise in K-12 enrollment through 2025 (Gais et al., 2018a). Though this framing of teacher supply shows no shortages, New York state has had one of the largest drops in enrollment in and graduation from teacher education programs, with a decline of 39 percent of teacher education graduates between the 2010-11 and 2015-16 school years (Gais et al., 2018a, para. 4). While there are larger numbers of graduates prepared to teach in special education, bilingual education and early childhood education, there are fewer graduates prepared to teach the core

subjects like math, science, English, Social studies, technical education, music and art (Gais et al., 2018a, para. 5). These identified shortage areas align with the messages that are available on teacher education program websites, which often focus on attracting those interested in science and technology, for example.

The challenge of recruiting and retaining teacher candidates to teach in districts with high poverty rates continues in New York State (Gais et al., 2018a, para. 6) and affects how teacher education programs spend their limited resources in time and messaging on websites. We can expect that districts local to many teacher education programs are calling for "targeted efforts" to increase preparation in shortage areas and to encourage graduates to take jobs in "urban, economically disadvantaged, and racially and ethnically diverse districts" (Gais et al., 2018a, para. 7). New York State institutions have the challenge of declining enrollment overall while simultaneously experiencing the numbers of PK-12 students rising in districts that struggle to find and keep teachers (Gais et al., 2018b, p. 21).

Messages to potential candidates about where shortages exist are often paired with specific programs that have been put in place to meet some targeted needs. In New York State, there is the Master Teacher Program that was started in 2013 in partnership with the State University of New York "to improve and expand the teacher pipeline in science, technology, engineering, and math (STEM)" (Gais et al., 2018b, p. 24). Many of the search outcomes teacher candidates can access are accompanied by information about the Master Teacher Program in New York State.

Other initiatives have included the TeachNY Advisory Council, which was focused on access to data about P-20 contexts, the Teacher Opportunity Corps, which offers grants to teacher preparation programs that provide mentorship and internships in high-need schools to support the participation of underrepresented groups in teaching, and the Teachers of Tomorrow program, focused on funding and incentives to teachers to fill positions in subject area shortages (Gais et al., 2018b, pp. 24-25). Each program addresses just part of the challenge of presenting potential pathways for interested teacher candidates. There is yet no cohesive or state-wide approach to recruiting and retaining teachers where they are needed. These limited programs do hold space within teacher education program platforms and draw attention to and shape messages that teacher candidates may view, especially in relation to any incentives and funding for their teacher education.

New York State provides the context for considering messages teacher education programs communicate about both the need for teachers and how to become a teacher. We could debate whether or not there is a shortage because there are many districts that have no problem recruiting and retaining teachers. Those districts are likely to be close to teacher education programs that provide an ample supply of student teachers. These same districts most likely also provide reasonable salaries and decent working conditions, which help all of us to portray the profession of teaching as worthwhile, even as candidates in New York State must negotiate many requirements on the pathway to becoming a teacher. Then there is New York City, facing shortages of thousands of teachers in the face of hybrid learning during the pandemic and at the time schools are meant to open (Shapiro, 2020). While current challenges are unique, I can't help but ask how so many teachers will be "drafted" and what messages and tools will New York City use to recruit so many teachers at once.

The "Draft" in Teacher Education: Retention Versus Recruitment

Key and Peele (2015) aired an episode of their comedy show called "Teacher Center" (Key, Peele & Atencio, 2015). It parodies the structure of the program Sports Center, which is produced on the ESPN

television channel. To make this form of comedy, all the writers and producers had to do was present the same things that sports broadcasters say about professional athletes during their season of recruitment like during the National Football League (NFL) draft, but replace the images and content related to football with the images of and content related to what teachers do. While Key and Peele (2015) present a message to viewers that such teacher celebrity could be part of our vision, paying teachers with attention and salaries similar to professional athletes and celebrities seems to be part of the punch line. How could this "vision" ever be more than for laughs? Comedy can dramatically frame messages viewers have about any subject, and this particular sketch is one example of how "drafting" teachers into the profession is yet an area for humor and rarely for serious policy consideration and spending of resources. I ask here if recruiting candidates through an intentional framing of messages about clear pathways and compelling outcomes has ever garnered serious attention and resources.

First, we might ask whether or not colleges and universities have felt the need to have recruitment strategies at all. At one point, New York's past Commissioner of Education John King told a gathering of teacher educators that the state did not need any more elementary education majors (King, 2013). This was an example of messages that worked against any effort to spend resources on recruitment when there were already "too many" candidates in at least one area.

Even when recruitment strategies are part of the focus of research, there exist few discussions of explicit attention to messages teacher education programs provide for potential teacher candidates. For example, there continue to be efforts to recruit underrepresented teachers because of the ongoing gap between the percentage of students of color, for example, and the percentage of teachers of color (Ingersoll, May & Collins, 2019). Since the 1990s, there have been increasing numbers of teachers of color. However, this increase has been negatively affected by high rates of turnover that are connected to the state of working conditions and lower salaries in high-needs schools where the majority of teachers of color work (Ingersoll et al., 2019). There are indicators that underrepresented teachers can be recruited into teaching with incentives and messages that match the needs of specific districts with the growing number of teachers of color. The question is what those teachers will find when they arrive. A question we might consider is what messages were communicated about the realities of teaching in high-needs schools.

Podolsky et al. (2019) reviewed strategies across district, state and federal contexts that have been effective, especially in influencing teachers when they are deciding to stay in or leave the classroom. These strategies have focused more on retention than on initial recruitment, though the strategies reviewed such as improved and comprehensive preparation, school leadership and working conditions, collaboration and decision making could align with what teacher education programs communicate about what teaching should be, and about what teacher candidates might be compelled to advocate for as they enter the teaching force.

States are required to discuss their recruitment and distribution of qualified teachers by the Every Student Succeeds Act (ESSA) (Sykes & Martin, 2019). Unfortunately, states are not targeting their efforts to assure teachers work in content areas, schools and urban and rural settings that have continued shortages of qualified teachers (Sykes & Martin, 2019). While some states are identified as having higher quality plans related to more equitable funding, improved school leadership and higher wage and scholarship incentives (Sykes and Martin, 2019), the idea of communicating effectively about the realities and the potential within the teaching profession are not discussed.

Mode of Address: Who Do We Think We are Recruiting?

How might we focus attention on the messages related to recruitment of teacher candidates, beyond retention of those already knowledgeable about the teaching profession? The work of Elizabeth Ellsworth (1997) is instructive for how it focuses on mode of address, which is used by those who study films to pose the question, "Who does this film think you are?" (p. 1). Ellsworth (1997), in her text *Teaching positions: Difference, pedagogy, and the power of address*, uses mode of address as an "analytical concept" from film criticism and media studies to examine curriculum and pedagogy and student-teacher relationships (pp. 1-2).

The concept of mode of address is used here as an analytical tool for discourse analysis to raise questions about the messages available to those searching for information about teaching. We can ask, who do these search results think you are? Within the results of those candidates' searching, we can also ask, what do messages say about teacher education? And, what do those messages say teaching is?

Aligned with Ellsworth's work, Kumashiro (2004) examined specific modes of address within 80 elementary and secondary teacher education programs across the U.S. over the course of 2 years, from 2000 to 2002. These programs were embedded within a variety of types of institutions and located across a range of geographic locations. Kumashiro's search for "shared discourses or common movements among them" (pp. 2-3) informs the methodology of this study.

Methodology

> "Now, *here* you see, it takes all the running *you* can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!" (Carroll, 1871/2005, p. 175).

Lewis Carroll's (1871) Red Queen in *Through the Looking Glass* describes how fast Alice must run to get somewhere else and helps to capture the sensation of conducting research online. The more I searched within the network of hyperlinks, the more I felt the need to "run faster." Within this section, I describe some foundational terms for Interment-Mediated Research (IMR) and how I use discourse analysis. I then briefly explore the "messiness" and limitations within the digital landscape and this research, especially connected to reliability within search engine results. Finally, I discuss the procedures I used to conduct discourse analysis using Ellsworth's (1997) ideas of mode of address to examine messages available within the data collected.

Internet-Mediated Research (IMR)

The Internet itself can no longer be considered a "technological tool" but instead must be viewed as "a wholly new, constructed environment with its own codes of practice" (Mann & Stewart, 2000, p. 7). Internet-Mediated Research (IMR) uses "Unobtrusive Observation" (Hewson, 2017, p. 67), which includes observation of online interactions and document analysis of published documents and other media (Hewson, 2017, p. 67). Sampling within the methods of unobtrusive observation includes focusing less on individuals and groups and more on static online data sources (Hewson, 2017, p. 70). This research project sampled only from media and messages available online within search engine results, college and university websites and limited social media platforms.

One of the challenges of conducting hyperlink network searches and analysis is the "challenge of dealing with datasets that potentially consist of millions of web pages" (Ackland, 2009, p. 485). In response, I use a "small and well-defined population of sites" (Ackland, 2009, p. 485) based on geography (New York State) and a specific set of related queries (How to become a teacher in New York State and in its varied higher education contexts) in order to conduct discourse analysis within this select sampling.

Discourse Analysis

Discourse analysis includes the aim of "uncovering the features of text that maintain coherence in units larger than the sentence (Brown & Yule, 1983)" (Peräkylä, 2005, p. 871). Within this research, search engine results became the "naturally occurring" and "empirical materials" that provide texts that are examined without a "predefined protocol" for analysis (Peräkylä, 2005, p. 870). The texts and images were viewed, read and reread to identify key themes and meanings within the messages available within the digital landscape.

There are studies that use online forums to understand how the teaching profession and various fields are being constructed (Ruecker & Ives, 2015) and how such texts reproduce power and social inequalities, in line with Critical Discourse Analysis (CDA) (Peräkylä, 2005). They focus on targeted sites by applying specific criteria to create a relevant sample for discursive analysis (Ruecker & Ives, 2015). Raising questions like those from Ellsworth (1997) about mode of address helps to apply questions as criteria that help me to use discourse analysis within a relevant and targeted sample in order to critically analyze the messages available to potential teacher candidates.

Limitations: "Messiness" in the Digital Landscape

Tsatsou (2016) describes the "messiness" of digital research (p. 598) and how "small-scale qualitative analysis cannot fully address the problem of the low reliability and quality of much of the data we find online" (p. 600). Unobtrusive observations and "objective" document analysis (per Bowen, 2009) still produce search results that are tailored for me and would look different for you as determined by your location, search history and number of times you have visited sites (Gabbert, 2019). The recommendation in response to these problems of reliability and quality of data is to provide a less technical account related to the digital technologies available and more "insight into researchers' own experiences and reflective accounts" of what they find in their research within specific digital landscapes (Tsatsou, 2016, p. 600).

This study provides insights into the process of how I and other educators might examine messages within a specific digital landscape. The media that are included within this landscape are search engine results and a review of a select sampling of one state's public and private college and university websites. Also included is a narrow sampling of searches on five platforms: Facebook, Instagram, Twitter, LinkedIn and Youtube. I use discourse analysis to identify and analyze patterns within the tailored messages available to me, expecting that, even when other viewers and browsers do their own searches, that they will be able to find similar patterns in their search results when they use similar queries.

Procedures

The first step was to decide what to type into the search boxes within Google and then within specific teacher education websites. Commissioner Elia provided the basic question, "How do young people know what the pathways are for becoming a teacher in our state?" The question that matched this inquiry seemed to be, "How to become a teacher in New York State?" I typed in this query first in Google to examine initial search page results. I then replaced New York State with "in SUNY" or "in CUNY" or "in independent colleges and universities" (often identified as a coalition represented by the Commission on Independent Colleges and Universities - CICU) in order to sample messages connected to the range of teacher preparation programs across the three different systems in New York State.

The second step was to organize and examine the initial results in order to conduct searches within specific teacher education program websites that were connected to those original results. The program websites that I chose to examine further were those that were part of the first page of results, so they were ranked by the algorithm within the Google search engine as most visited or most relevant to that query of how to become a teacher in each of those systems. Within these program websites, I used the search query of, "How to become a teacher" and I also used the broader term of "Teacher Education" to see if there were substantially different results that included more specific content about the status of teacher education within each organization.

The third step was discourse analysis using Ellsworth's (1997) analytical tool of mode of address to raise critical questions about the messages available to viewers. I focused not only on text but also on visual features that made up the discourse and messages available on websites. The questions I used to analyze these messages included the following: What do messages say about who we think potential teacher candidates are, specifically as browsers of information about why and how to become a teacher? What do they say about teacher education? And, what do they say about teaching?

Findings and Initial Analysis

I started by searching on Google with the query, How to become a teacher in New York State, in order to examine what was available on the first page of search results. I then added specific locations of teacher education programs (state universities, city universities, independent colleges and universities) to the query. To organize and analyze my findings, I pasted headings that were found within the first page of the Search Engine Results Page (SERP) into a chart and summarized the website content, then identifying themes within both the text and image results that emerged using questions about mode of address to identify those themes. I followed this same protocol in using the initial query of how to become a teacher on select for-profit teacher education program and social media sites.

Initial Query and Results

Table 1 identifies results from the initial query in Google (see Appendix). The first results are briefly summarized and the critical questions about mode of address that were used to analyze the results to find themes are listed. The themes are responses not only to the application of the critical questions to each result but to the repetition of patterns of information available across results.

Initial search results locate the browser as already knowledgeable about how to read and follow detailed, somewhat technical procedures and steps to become certified. While there is a pattern of providing steps in response to a how-to question, there is an absence of connection of this information to teacher education program websites and resources that could help browsers interpret the steps and procedures. Along with the absence of references to teacher education programs is the lack of initial information about teaching, though that may be in response to the query focusing on becoming, not being a teacher (see Appendix, Table 1).

Three Systems

The SUNY colleges and universities are located across New York State and the CUNY colleges and universities are located in the boroughs of New York City; all are publicly funded. Most independent and private colleges in New York State are part of the Commission on Independent Colleges and Universities (CICU) and are non-profits with less access to public funding than the SUNY and CUNY schools have. Table 2 shows the initial results of the query, How to become a teacher in SUNY, CUNY, and Independent Colleges and Universities (see Appendix). The Search Results Summaries focus on the order of results and the themes focus on what is distinctive about each system and uses the same critical questions about mode of address to analyze each search result and the patterns of messages and discourse across all results.

When searching within the SUNY system, browsers searching for specific pathways for how to become a teacher will first find the Master Teacher Program, which is aimed at practicing teachers. Specifically, it is for teachers with a Science, Technology, Engineering and Math (STEM) focus or for those practicing teachers who want to improve their practices related to STEM. Additional results locate the browser as knowledgeable enough to sort through policy documents that also include some history and context for the SUNY system itself. Teacher education provides mostly procedural information and teaching is represented within STEM subjects, which are highlighted within the Master Teacher Program (see Appendix, Table 2a).

The CUNY system results aim more messages directly at browsers intent on finding purpose connected to the aspiration of teaching. There are questions directly stated within the headings of the search results that are directed at the "you" who is browsing: Inspired to teach? And, What do I need to become a teacher? The specific websites provide answers in response to those questions. The CUNY system stands out for having images within the results that represent diverse groups of people. The messages about teaching are that it is for diverse groups of people, locating browsers as among those diverse groups (see Appendix, Table 2b).

Independent Colleges and Universities also have more questions and messages that are visually prominent within their results that are directed at the "you" who is browsing. They locate browsers who search for private, independent institutions as those who might have questions about college debt and the cost of funding private tuition. The first search result is actually an advertisement for a private college, which communicates the idea that browsers need to see the selling points of private institutions. Teacher education and teaching are connected to questions about answering to a passion and are otherwise less prominent than information about the costs and funding opportunities of private, independent institutions (see Appendix, Table 2c).

Patterns of Discourse Across System Websites

I typed into Google the query about becoming a teacher across the three systems in New York State. I discussed the initial results of that query in the section above and showed summaries and themes in Tables 2a-c. I then visited a sampling of college and university websites in each system, based on how often they were shown in the search results. There were common patterns in the discourse and messages at those college and university websites and I include those in Table 3 (see Appendix, Table 3).

Within each of the college and university websites, I then typed in the queries of, How to become a teacher, and the more general, Teacher Education, in order to find the specific messages that each college, university and teacher education program would provide in their search results. Table 3 identifies the patterns found across those websites in response to those more specific queries. Instead of specific summaries of each site, I identify patterns within the search results and then the themes that emerged after applying questions about the mode of address to those patterns of messages available to browsers (see Appendix, Table 3).

After visiting multiple college and university websites that showed similar patterns of types of images and information on their home pages, it became evident that the discourse and messages available to browsers were using a similar mode of address. The who that the messages are addressing are or expect diversity in representation on college and university campuses. Browsers are addressed as consumers searching for post-secondary experiences that meet their individual needs, including the use of social and other platforms to stay connected within the community and to communicate to those outside the college and university. Colleges and universities are expected to be locations and sources of contemporary, current events. As consumers, potential candidates browsing college and university websites are addressed with graphics that provide numbers and percentages that describe what post-secondary education offers. While the home pages of colleges and universities across the three systems had common forms of visual and text-based discourses, browsers are also presented with information about what makes each institution unique. In browsing across university, college and community college sites, messages take on different forms in terms of volume of information at larger institutions and fewer choices at smaller institutions. Teacher education and teaching are not prominent in the home page messages at colleges and universities and are most often found within the specific teacher education program pages at each college and university (see Appendix, Table 3).

In examining how each college and university responds to the query of how to become a teacher within their websites, it is clear that recruiting of those interested in STEM content is being addressed. Text and images about secondary content and STEM areas are repeated across search results within college and university sites. Also repeated are messages about what makes each institution distinctive, whether by specific teacher education programming or by the values and traditions of the institution. Within the search results on college and university websites, the browsers and potential candidates are still addressed as already knowledgeable because they need to sort through teacher education procedures to find the clear steps to becoming a teacher. Browsers seem to be expected to know that larger universities offer graduate education and smaller, private colleges and community colleges might only offer Education Studies or initial steps to becoming a certified teacher (see Appendix, Table 3).

I used the broader query of "Teacher Education" to examine if there were more specific steps a candidate could find within the results to this query. This query resulted in more images of faculty members and more procedural and policy documentation about steps to be certified and accredited.

Beyond Three Systems

I found within the initial search results some descriptions of for-profit undergraduate colleges and one for-profit graduate school. Alternative pathways are offered along with typical pathways at traditional teacher education organizations, though such programs are often embedded within the more traditional structures with adjustments in timing and length of the program offered to constitute an alternative approach. The two for-profit schools at the undergraduate level in New York State (Monroe College and Five Towns College) offer limited types of teacher certifications and limited information on their sites about those programs.

The Relay Graduate School of Education (GSE) addresses all of its messages specifically to candidates interested in teaching, in contrast to more traditional colleges and universities across the state. Two- and four-year colleges and universities offer multiple degrees and majors, including teacher education, which must be searched for once arriving at their home pages. In contrast, the Relay GSE is solely focused on teacher certification and so all its content and messages are about becoming a teacher. Their programs are focused on "Aspiring Teachers" and School Leaders. Their messages prompt browsers to "change the future" and the images on the website include diverse groups of students and teachers. Residencies are emphasized and address candidates as ready to enter teaching quickly through these residencies. Teacher education is framed as completely practical in nature, to be applied Immediately within classroom and school settings, and teaching is described as impactful.

Social Media

I did limited searches on Facebook, Instagram, Twitter, LinkedIn and YouTube. Each platform offered a mix of images, videos and text and the query, How to become a teacher, resulted in advertisements for education programs (on Facebook), offerings of specific teachers to follow (on Instagram) and specific job positions (on LinkedIn), and then steps and advice for viewers from experienced teachers (most often found on Twitter) and from recently graduated/certified teachers (on YouTube).

The user of social media is definitely addressed with multiple types of visuals that include invitations to join groups, view photos and quotes, to become friends and to have what is viewed as tailored to what was entered into the Google query box. Many social media sites count on individuals to follow, friend and generally link to many others in order to have messages tailored to what the browser wants and needs. LinkedIn offers specific job postings and sites like Twitter and YouTube offer images, videos and articles that are both brief and informative in terms of offering steps and how-tos. While searches within social media platforms were narrow, they did indeed provide clear steps specific to becoming a teacher from those who were addressing them directly, providing that tailored and clearer pathway.

Discussion

Within this research, I followed a specific query about how to become a teacher from an initial Google search to the websites of colleges, universities and other teacher education and social media sites. I was seeking to explore initial steps similar to the journey that many potential teacher candidates might take to find out basic information about how to become a teacher. I wanted to respond to Commissioner Elia's inquiry: Is there one place for young people to go to find out about how to become a teacher? That

one place may or may not be Google; it seemed a productive place to begin to explore the digital landscape and pathways into teaching.

I summarized the messages found within the results and then applied questions about mode of address to find patterns and themes in the discourse of those messages. As a reminder, mode of address is helping to ask, Who do the messages "think" teacher candidates are? Asking this question helps identify the connection between potential teacher candidates and the possible pathways they can take by examining what they are expected to know and be when seeking information about teaching.

I organize the next parts of this discussion by identifying overarching themes from across the initial findings. Within every search, potential teacher candidates as browsers are confronted with a large variety of procedural and technical information. This makes for cluttered pathways into teaching and no cohesive narrative about how to become a teacher, nor about teaching as a profession. Alongside the clutter of information was an absence of the key interpreters of that information for most teacher candidates - teacher educators and the institutions of teacher education. Teaching as a profession was not described as multifaceted and instead was presented as a place for STEM-focused work.

Potential Teacher Candidates: Cluttered Pathways

The digital landscape that emerges from the basic search of how to become a teacher in New York State is cluttered with procedural and technical information from different types of sources. Teacher candidates are addressed as those who are expected to sort and sift through volumes of mostly text-based information with specific steps and technical terminology about becoming a teacher. There are few connections to teacher education resources that can help provide interpretation of those steps.

Within the three main systems of post-secondary education that offer teacher education programs, potential candidates are sometimes addressed more directly as those who need to not just sort through procedural and policy documents but also those who are aspiring to find purpose in the work they do. Within some of the specific results asking how to become a teacher within the SUNY, CUNY and CICU systems, there are questions and responses directed at the potential teacher candidate as aspirational browser, such as "Inspired to Teach?" Also, the basic question of How do I become a teacher? is clearly present, and is answered with steps specific to what those institutions can provide as answers.

While browsing potential teacher candidates are addressed as expecting diversity and contemporary use of social media and connections, this is within college and university home pages and not widespread across teacher education-specific pages. When searches go further into specific teacher education programs, there is less diversity of representation and of content area options. If potential candidates are browsing, they are expected to move towards content areas that have high value or at least high need, like in the STEM subject areas.

Teacher Education: Absent Interpreters

Within initial searches, teacher education sites are absent. It is corporate and governmental organizations that provide the initial results about how to become a teacher to those who seek a pathway into teaching, and those pathways are cluttered and require the candidates to already have a knowledge base that could help them sort and interpret the information at hand. Within the college and university sites, teacher education programs are not always immediately present among the large mix of

programming offered at two-year and four-year institutions. Teacher education is present when typing in a specific query within the college or university search engine. However, searching within teacher education programs will also often lead to more procedural information about certification and accreditation.

Teaching Profession: STEM Emphasized

Images of teachers and teacher candidates engaged in work in labs are prevalent when moving further into college and university teacher education program sites. The teaching profession is viewed as emphasizing STEM content areas; narratives about all the choices of grade and age levels are absent. The presence of teachers' voices is also invisible. Testimonials from current teachers were not clearly evident across search results, so that the teaching profession is not part of the mode of address to potential teacher candidates in searches on traditional teacher education program sites.

For Profit and Social Media: Clearest Pathways?

The for-profit graduate school in New York State (Relay GSE) can focus all of its messages on teaching "Aspiring Teacher Candidates." This school can present clearer messages and pathways because it has a narrow focus on teacher certification for its programming. Social Media sites have the most tailoring in their browsing results and can also be viewed as providing some of the clearest presentation of steps for how to become a teacher, though the clear steps are spread across the various platforms, still requiring candidates to have knowledge about how to search effectively.

Limitations and Worthiness

As Markham (2005) noted, internet-mediated research raises questions about whether the method of unobtrusive observation of data found online is desirable and Tsatsou (2016) points out the lack of reliability and quality of that data. Human fatigue is a limitation, too. The machine/ algorithm-generated hyperlinks mushroom in number and human researchers do not have the stamina that is inherent to alpha search engines and machine-based tools to examine more than a limited data set from among the large numbers of available hyperlinks. The final question related to these real concerns about validity and reliability of data can be worthiness: Is it worth the time of researchers and readers to examine the messages available to potential teacher candidates, even if those messages shift across time and contexts? I draw conclusions in the next section in order to answer this question.

Conclusions

A prompt from the former Commissioner of Education in New York State provided an opportunity to look more closely at the first steps potential teacher candidates might take in seeking to find out more about becoming a teacher. Going down the "rabbit hole" of Internet-mediated research resulted in search results that provide no clear and cohesive response to the question, How do I become a teacher? Instead, search results are cluttered with procedural steps about program requirements that require constant sorting and sifting in order to find pathways directed at what potential teacher candidates might need to get started with their teacher preparation.

Beyond the search queries online, I sought to raise critical questions connected to the mode of address (Ellsworth, 1997) aimed at potential candidates. In examining the messages that result from the query about how to become a teacher, we can ask, "Who do these messages think teacher candidates are?" It appears we are addressing viewers who we insist already have a base of knowledge about how to follow specific procedures, as if the viewer has already been inducted into the language of mandates and certification requirements.

The final question is, "How do we present the role of teacher education and the profession of teaching to the browsing population?" In response, the mode of address about teaching is that it requires a knowledge of specialized professional discourses and sets up a cluttered web of steps to follow. There are select messages addressed to browsers about aspiring to reach students and make a difference in their lives, though this framing of teaching is not often paired with the official procedures embedded more deeply within program websites.

Looking closer at the networks of links and messages available to recruit the future of our profession does indeed seem worth the time and necessary to understand how we as teacher educators directly and indirectly communicate with potential and current teacher candidates. Looking critically at the discourse available can assist us to examine the clutter and the gaps within messages about our profession and help the candidates with whom we work to maneuver the full landscape related to pathways into teaching. Without making initial messages potential candidates are viewing more intentional, addressing all that viewers might desire within a lifelong career, we may face the continued shortage of new interest and investment in teaching from an entire generation we hope would continue to renew our shared profession

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Appendix

Table 1
Initial Results

Query in Google	Search Results Summary	Mode of Address	Themes
How to become a teacher in New York State	1st - 5th results: .com Certification steps and requirements 6th: .org Teacher salaries 7th: .gov Certification process 8th: .org Four paths to teaching license 9th/10th: .com Repeat of first five results - certification steps 11th-13th: .gov, .org Financial assistance and paths to teaching in New York City	What do messages say about who we think potential teacher candidates are? What do they say about teacher education? What do they say about teaching?	Browsers/candidates are assumed to already be literate in procedures with enough background knowledge to follow detailed, technical steps Teacher education programs are absent from initial results; no .edu sites and only .com, .org, .gov and .net sites Narratives and information about the profession of teaching are absent in initial results; little cohesion except common theme of procedural information

Table 2a

Results: How to Become a Teacher in SUNY

Search Results Summary	Mode of Address	Themes
1st result, repeated once: Master Teacher Program application details 2nd-6th results: SUNY system policy implementation, history and numbers documents 7th-12th results: specific colleges within SUNY system with advertisements, history or certification steps listed	What do messages say about who we think potential teacher candidates are? What do they say about teacher education? What do they say about teaching?	SUNY: Browsers/ candidates are meant to sort through information about programs available to already certified teachers and detailed policy documents Teacher education is represented by specific college sites, which provide procedural information for certification Teaching is represented through Master Teacher Program and as opportunities for STEM teachers specifically

Table 2b

Results: How to Become a Teacher in CUNY

Search Results Summary	Mode of Address	Themes
1st-4th results: same central cuny.edu site directed at browsers looking to choose education as a career with headings that provide questions and answers: "What do I need to become a teacher?" and "Why become a teacher?"	What do messages say about who we think potential teacher candidates are?	Browsers are searching for purpose in messages Teacher education provides the specific questions and answers related to the aspiration to teach
Images of diverse groups of students and teachers 5th result: assistance/ TEACH grant info	What do they say about teacher education?	More messages addressed to the "you" that might be searching. Example text: "Do you want to make a difference?" and "Inspired to teach?"
6th, 8th-11th: sites of 2 specific CUNY schools, including 1 community college 7th: certification information and difference between alternative & traditional programs 12th-15th: ads	What do they say about teaching?	Teacher education can also be found in community college contexts Teaching is for diverse groups of candidates, as represented in initial search results by images of diverse candidates

Table 2c

Results: How to Become a Teacher in CICU

Search Results Summary	Mode of Address	Themes
1st result: ad for a specific college to "ignite your passion" 2nd: .gov information on unrestricted aid to independent colleges/ universities 3rd-5th: .gov results about Higher Ed Opportunity and Office of Higher Ed grant and funding initiatives 6th-7th: .com best NY colleges for education and how to become a teacher in NYC 8th: images 9th: specific school site, which is a SUNY school offering courses online 10th-11th: .org and .us sites offering information about grants, scholarships and types of higher ed schools 12th: Education in New York City entry in Wikipedia 13th-15th: ads for specific private schools	What do messages say about who we think potential teacher candidates are? What do they say about teacher education? What do they say about teaching?	Browser is addressed more directly and is noted as concerned about college debt with messages about private versus public college debt load and more results related to funding Browser needs reasons to attend private institutions Also more text that includes messages addressed to the "you" that might be searching. Teacher education in independent institutions located within colleges that have greater number of ads, which raises their position on the search engine results page to the upper part of the page Teaching connected to passion on some specific school sites

Table 3
Patterns of Discourse Across System Websites

Sampling	Search Results Summary	Mode of Address	Themes
Colleges and Universities from SUNY, CUNY and CICU system were chosen for how often they emerged in search results to the initial query.	College/University Initial Text on home pages: Paired with images of diverse groups by race and gender Text addresses browser directly, addressing the "you" that is viewing the site Text and links to academic programs and college events are clearly evident. Also evident across sites are links to external news sources and social media sites: Facebook, Twitter, Instagram, LinkedIn and YouTube Infographics are presented on almost every home page - with statistics about rankings, debt load, percentage of faculty with terminal degrees, number of academic programs, diversity of student body. Also, uniquely in one case - the number of wooded acres accessible to campus members Time sensitive information about famous speakers for Black History Month (February). Also current to search was emergence of novel Coronavirus	What do messages say about who we think potential teacher candidates are? What do they say about teacher education? What do they say about teaching?	Browsers expect diversity in groups on college and university campuses Browsers are consumers searching for post-secondary experience that addresses their individual needs Browsers expect post-secondary institutions to use social and other media Browsers as consumers need information in the form of numbers and percentages about what post-secondary institutions offer Browsers expect post-secondary institutions to be locations and sources of contemporary and current events Browsers can expect different amounts of information from different post-secondary institutions Teacher education and teaching are not often emphasized on home pages of colleges and universities, though they

			are listed among many different programs
Within College/ University Websites: Initial query, How to become a teacher Secondary query: Teacher Education	Mix of texts and images, white female gendered individuals and female and male candidates of color who were often located in labs and in other STEM-related contexts Secondary results: program requirements and certification Unique to some institutions was a focus on specific values and/or religious traditions due to the history and context of some faith-based colleges and universities Also unique to some institutions was a focus on STEM-based secondary or special subject content areas like music education Some senior colleges or universities only offer graduate education programs and certification pathways Some private and independent colleges and universities offer an Education Studies minor, which is not often presented as an option at larger, publicly funded institutions	What do messages say about who we think potential teacher candidates are? What do they say about teacher education? What do they say about teaching?	Secondary and STEM content areas are recruiting potential candidates Browsers seek information that makes post-secondary institutions distinctive Browsers of information about teacher education in general are knowledgeable about teacher education procedures Teacher education is embedded within programs that have values associated with their specific and unique institutions Teacher education and teaching require browsers to sort through information about procedures Browsers seeking steps to becoming a teacher are addressed directly Browsers seeking teacher education information need to be able to sort through specific information about accreditation and other institutional procedures Browsers must also sort through information about what is accessible

	Search results from querying about how to become a teacher were more conversational and directed at the "you" that was browsing, whereas results from the broader query of "teacher education" showed more faculty images and text and more information about accreditation and program requirements Community Colleges: shorter web pages, less text with fewer images and programs cited	depending on the size and resources of the institution; larger universities will only offer teacher education at the graduate level. Community colleges and some private and independent schools also have fewer options, some in the form of an Education Studies minor or program